## **CONTENTS OF VOLUME 58**

## Number 1

# Radiochemistry and Radionuclide Applications

P.I. Ivanov, G.D. Bontchev, G.A. Bozhikov, D.V. Filossofov, O.D. Maslov, M.V. Milanov and S.N. Dmitriev	1	Study of the <sup>111</sup> In-DTPA complex by the electromigration method
Arzu Kurtoğlu and A. Beril Tuğrul	5	Gold analysis by the gamma absorption technique
M. Nakayama, M. Haratake, M. Ono, T. Koiso, K. Harada, H. Nakayama, S. Yahara, Y. Ohmomo and Y. Arano	9	A new $^{68}\mathrm{Ge}/^{68}\mathrm{Ga}$ generator system using an organic polymer containing N-methylglucamine groups as adsorbent for $^{68}\mathrm{Ge}$

# **Radiation Sources and Applications**

Izabela Puchalska and Mieczyslaw Mielcarski	15	Seed-less iodine-125 ophthalmic applicator
T.E. Barnhart, A.K. Converse, K.A. Dabbs, R.J. Nickles, K. Buckley, S. Jivan, T.J. Ruth and A.D. Roberts	21	Water-cooled grid support for high-power irradiation with thin target windows
A.A. Naqvi, Fazal-ur-Rehman, M.I. Al-Jarallah, F. Abu-Jarad and M. Maslehuddin	27	Performance tests of external moderators of a PGNAA setup
B.M. Coursey	39	Editorial note
Letters to the Editor  Andrew C. Todd, Michelle Arnold, Antonio Aro, David R. Chettle, David E.B. Fleming, Fiona E. McNeill, Erin L. Moshier, Huiling Nie and Ian M. Stronach	41	Corrections to "How to calculate lead concentration and concentra- tion uncertainty in XRF in vivo bone lead analysis" by Kondrashov and Rothenberg
V.S. Kondrashov and S.J. Rothenberg	51	Comments on article "Corrections to "How to calculate lead concentration and concentration uncertainty in XRF in vivo bone lead analysis"

# **Synthesis of Labelled Compounds**

Matthias Glaser, David R. Collingridge,	55	Iodine-124 labelled Annexin-V as a potential radiotracer to study
Eric O. Aboagye, Lisa Bouchier-Hayes,		apoptosis using positron emission tomography
O. Clyde Hutchinson, Seamus J. Martin,		
Pat Price, Frank Brady and Saiinder K. Luthra		

# Radioactivity and Radiation Measurements

R. Köseoğlu, E. Köseoğlu and F. Köksal	63	Electron paramagnetic resonance of some $\gamma$ -irradiated drugs
S.M. Qaim, A. Hohn, Th. Bastian, K.M. El-Azoney, G. Blessing, S. Spellerberg, B. Scholten and H.H. Coenen	69	Some optimisation studies relevant to the production of high-purity $^{124}\mathbf{I}$ and $^{120g}\mathbf{I}$ at a small-sized cyclotron
Ronald O. Rahn	79	Chemical dosimetry using an iodide/iodate aqueous solution: application to the gamma irradiation of blood

Felícia D.G. Rocha, Mércia L. Oliveira, Sonia G.P. Cecatti and Linda V.E. Caldas	85	Properties of sintered amethyst pellets as thermoluminescent dosimeters
Chi-Chang Liu, Tieh-Chi Chu, Sung-Yen Lin and Jao-Perng Lin	89	Indoor light on thermoluminescence of CVD diamond film used as a high-energy photon dosimeter
V.I. Yoschenko, V.A. Kashparov, V.P. Protsak and J. Tschiersch	95	Autoradiographical methods for the assessment of radionuclides in hot particles on filter samples
H.K. Aage and U. Korsbech	103	Search for lost or orphan radioactive sources based on NaI gamma spectrometry
Technical note	116	Same microdesmetric data on Actatina 211
Turan Ünak	115	Some microdosmetric data on Astatine-211
	Nucle	ear Geophysics
A. Elyahyaoui, R. Zarki and A. Chiadli	119	A method for the rapid radiochemical analysis of uranium and thorium isotopes in impure carbonates
M.S. Hamlat, H. Kadi, S. Djeffal and H. Brahimi	125	Radon concentrations in Algerian oil and gas industry
U. Woźnicka, K. Drozdowicz, B. Gabańska, E. Krynicka and A. Igielski	131	Are geological media homogeneous or heterogeneous for neutron investigations?
T. Cywicka-Jakiel, J. oskiewicz and G. Tracz	137	The optimisation of the fast neutron and gamma-ray transmission set-up for moisture measurement of coke
Technical note S.M. El-Bahi	143	Radioactivity levels of salt for natural sediments in the northwestern desert and local markets in Egypt
D.M. Taylor	149	Publications received
Corrigendum		
B. Leprince and J. de Sanoit	151	Corrigendum to "A new design of <sup>238</sup> Pu activity sources for use in intercomparison exercises" [Applied Radiation and Isotopes 57 (2002) 171–176]
Events	153	
		Number 2

### Radiochemistry and Radionuclide Applications

Ayben Kilislioglu and Binay Bilgin	155	Thermodynamic and kinetic investigations of uranium adsorption on amberlite IR-118H resin
S. Markai, G. Montavon, Y. Andrès and	161	Transfer of Eu (III) associated with polymaleic acid to Bacillus subtilis

## **Radiation Sources and Applications**

S. Stoulos, M. Fragopoulou, J.C. Adloff, M. Debeauvais, R. Brandt, W. Westmeier, M. Krivopustov, A. Sosnin, C. Papastefanou, M. Zamani and M. Manolopoulou 169 Application of activation methods on the Dubna experimental transmutation set-ups.

P.M. Jenneson, W.B. Gilboy, E.J. Morton and P.J. Gregory

177 An X-ray micro-tomography system optimised for the low-dose study of living organisms

#### **Synthesis of Labelled Compounds**

- Grace G. Shiue, Ping Fang and Chyng-Yann Shiue

  183 Synthesis of N,N-dimethyl-2-(2-amino-4-[18F]fluorophenylthio)benzylamine as a serotonin transporter imaging agent
- A.B. Kanu, M. Dixon, Y. Yin Zu, J. Bailey,
  J.M. Gillies, J. Zweit and C.L.P. Thomas

  193 Rapid screening of 2-[18F]-fluoro-2-deoxy-D-glucose infusions for volatile organic compound contaminants by solid phase microextraction with gas chromatography—selective ion monitoring mass spectrometry (SPME-GC-SIMMS)
- S. Zijlstra, J. Gunawan and W. Burchert

  201 Synthesis and evaluation of a <sup>18</sup>F-labelled recombinant annexin-V derivative, for identification and quantification of apoptotic cells with PET
- Iris Ben-David, Yulia Rozen, Giuseppina Ortu
  and Eyal Mishani

  209 Radiosynthesis of ML03, a novel positron emission tomography
  biomarker for targeting epidermal growth factor receptor via the
  labeling synthon: [11C]acryloyl chloride
- Ganghua Tang, Mingfang Wang, Xiaolan Tang,
  Lei Luo and Manquan Gan

  219 Pharmacokinetics and radiation dosimetry estimation of O-(2[18F]fluoroethyl)-L-tyrosine as oncologic PET tracer

#### **Radioactivity and Radiation Measurements**

- I.J. Kim, C.S. Park and H.D. Choi

  227 Absolute calibration of <sup>60</sup>Co by using sum-peak method and an HPGe
- Mauro S. Dias and Marina F. Koskinas 235 Standardization of a <sup>204</sup>Tl radioactive solution
- Aída M. Baccarelli, Mauro S. Dias
  239 Coincidence system for standardization of radionuclides using a 4π plastic scintillator detector
- I.M.M.A. Medeiros, C.B. Zamboni, 245 Excited levels in <sup>149</sup>Pm from the decay of <sup>149</sup>Nd F.A. Genezini, J.A.G. de Medeiros,
- L. Lakosi, N.C. Tam, J. Zsigrai and J. Sáfár

  263 Revealing smuggled nuclear material covered by a legitimate radioisotope shipment using CdTe-based gamma-ray spectrometry

## **Nuclear Geophysics**

A. Negarestani, S. Setayeshi, M. Ghannadi-Maragheh 269 Estimation of the radon concentration in soil related to the environmental parameters by a modified Adaline neural network

#### Technical notes

M.T.F. da Cruz and J.Y. Zevallos-Chávez

- A. Nada

  275 Evaluation of natural radionuclides at Um-Greifat area eastern desert of Egypt
- A. Sroor 281 Passive and active measurements of Egyptian monazite samples

#### Corrigendum

- Piyush Kumar, Leonard I. Wiebe, Rezaul H. Mannan, 287
  Zaihui Zhang, Haiyan Xia and Alexander J.B. Mc Ewan

  [Applied Radiation and Isotopes 57 (2002) 719–728]

  Corrigendum to: "[>99mTc] technetium labelled PnAo-azomycin glucuronides: a novel class of imaging markers of tissue hypoxia"
- Events 289

Nagdya M. Ibrahiem

Jun Sato

## Number 3

## Radiochemistry and Radionuclide Applications

Radiochem	Stry uni	a Rudionachae Applications
Hongli Li, Yan Cheng, Haifang Wang, Hongfang Sun, Yuanfang Liu, Kexin Liu and Shixiang Peng	291	Inhibition of nitrobenzene-induced DNA and hemoglobin adductions by dietary constituents
Turan Ünak, Yeliz Yildirim, Uğur Avcibaşi, Berkan Çetinkaya and Gülcan Ünak	299	Transfer of orally administrated iodine-131 into chicken eggs
A. Mushtaq	309	Preparation of high specific-volume solutions of technetium-99m and rhenium-188
Radia	tion So	urces and Applications
J. An, X. Xiang, Z. Wu, L. Zhou, L. Wang and H. Wu	315	Progress on developing 60Co container inspection systems
Aslam, W.V. Prestwich and F.E. McNeill	321	Lithium target performance evaluation for low-energy accelerator- based in vivo measurements using gamma spectroscopy
A.K.M. Chu, H.H. Cheng, R.C.W. Kwok and K.N. Yu	333	Study of air pollutants in Hong Kong using energy dispersive X-ray fluorescence
Z.L.L. Yeung, R.C.W. Kwok and K.N. Yu	339	Determination of multi-element profiles of street dust using energy dispersive X-ray fluorescence (EDXRF)
Synt	hesis of	Labelled Compounds
Y. Lin, X. Zhang, J. Li, D. Yin and Y. Wang	347	Preparation and radiolabeling of antimony sulfide nanocolloids with two different particle sizes
Eva Sailerova and Mervyn W. Billinghurst	353	Storage conditions for <sup>188</sup> Re-perrhenate solutions and their impact on the use of the <sup>188</sup> Re-perrhenate in the preparation of <sup>188</sup> Re labelled compounds
M. Gandomkar, R. Najafi, S.E. Sadat Ebrahimi, A. Shafiee, M.H. Babaei, M. Rabbani and G.A. Shabani	361	Direct labelling of octreotide with <sup>99m</sup> Tc: effect of different concentra- tion of reducing agents and amount of sodium pertechnetate on radiolabelling efficiency
Radioacti	ivity and	d Radiation Measurements
Xiaoxia Lü and Guojun Wang	365	Absolute radioactivity measurement of $^{60}$ Co, $^{134}$ Cs and $^{166m}$ Ho by $4\pi\beta-\gamma$ anti-coincidence method
E. Martinho, I.F. Gonçalves and J. Salgado	371	Universal curve of epithermal neutron resonance self-shielding factors in foils, wires and spheres
F. Szelecsényi, Z. Kovács, T.N. van der Walt, G.F. Steyn, K. Suzuki and K. Okada	377	Investigation of the $^{\rm nat}Zn(p,x)^{62}Zn$ nuclear process up to 70 MeV: a new $^{62}Zn/^{62}Cu$ generator
	Nucl	ear Geophysics

Radioactive disequilibrium in the different rock types in Wadi Wizr,

the Eastern Desert of Egypt

Natural radionuclides in volcanic activity

Peter Airey, Cath Hughes, Thomas Kluss, Emerenciana Duran, Brett Miller, Siripone Chiuenta, Alexander F. Nielsen and Suzanne Hollins	401	Evolving role of radiotracers in coastal zone studies
Zhao Peihua, Wang Jianmin, Ma Qingcheng and Chengcai	407	A study of oxygen activation well logging technique and its applications in the oil fields
M.J. Azlina, B. Ismail, M. Samudi Yasir, Syed Hakimi Sakuma and M.K. Khairuddin	413	Radiological impact assessment of radioactive minerals of amang and ilmenite on future landuse using RESRAD computer code
Events	421	

#### Number 4

## Radiochemistry and Radionuclide Applications

Chien-Yi Chen	423	Optimal conditions for identifying <sup>80</sup> Br and <sup>128</sup> I in health food Angelica keiskei using rapid epithermal neutron activation analysis
I. Veronese, A. Giussani, M.C. Cantone, T. Maggioni, C. Birattari, F. Groppi, E. Werner, P. Roth and V. Höllriegl	431	A re-evaluation of the biokinetics of zirconium in humans
N.S. Rajurkar and N.A. Gokarn	441	Studies on self and electrolyte diffusion in cesium halides
Dalia Nayak, Susanta Lahiri, Kamalika Roy, S. Basu and A. Ramaswami	447	Radiochemical separation of carrier-free $^{204,206}\text{Bi}$ from $\alpha\text{-irradiated}$ thallium oxide target
Technical note G.L. Silver	451	Plutonium disproportionation: the relation of work integrals

## **Radiation Sources and Applications**

Young-Don Hong, Sun-Ju Choi, Kyung-Hwa Kim, 455 Byung-Chul Shin, Woong-Woo Park, Sang-Hyun Park and Kyung Bae Park

## **Synthesis of Labelled Compounds**

K. Kothari, S. Suresh, H.D. Sarma, V. Meera and M.R.A. Pillai	463	<sup>188</sup> Re-labeled hydroxyapatite particles for radiation synovectomy
Erik F.J. de Vries, Joke Vroegh, Philip H. Elsinga and Willem Vaalburg	469	Evaluation of fluorine-18-labeled alkylating agents as potential synthons for the labeling of oligonucleotides
David G. Ahern, Anne G. Laseter and Crist N. Filer	477	The synthesis and characterization of [2,3-3H] gamma-aminobutyric acid via 4-aminotetrolic acid at high specific activity
Piotr Garnuszek, Dariusz Pawlak, Iwona Licińska and Anna Kamińska	481	Evaluation of a freeze-dried kit for EDTMP-based bone-seeking radiopharmaceuticals

## Radioactivity and Radiation Measurements

Divanizia N. Souza, Reges A. Meira,	489	Evaluation of doses in radiotherapy using solid-state composites based
José F. Lima, Mário Ernesto G. Valerio		on natural colourless topaz
and Linda V F Caldas		

Events

and K. Stefanis

O. Palacios and P. Bosch

VIII

527

#### Number 5

## Radiochemistry and Radionuclide Applications

Technical note G.L. Silver

Plutonium disproportionation: the ambiguity phenomenon

#### **Radiation Sources and Applications**

Ali S. Meigooni, Hualin Zhang, Candace Perry, Sharifeh A. Dini and Rafiq A. Koona

Theoretical and experimental determination of dosimetric characteristics for brachyseed<sup>TM</sup> Pd-103, model Pd-1, source

#### Synthesis of Labelled Compounds

K.K. Kothari, K. Raghuraman, N.K. Pillarsetty, T.J. Hoffman, N.K. Owen, K.V. Katti and W.A. Volkert

Syntheses, in vitro and in vivo characterization of <sup>9m</sup>Tc-(I)-tricarbonyl-benzylamino-dihydroxymethyl phosphine (NP<sub>2</sub>)

Jae Min Jeong, Yong Jin Lee, Eun-Hee Kim, Young Soo Chang, Young Joo Kim, Miwon Son, Dong Soo Lee, June-Key Chung and Myung Chul Lee

Preparation of <sup>188</sup>Re-labeled paper for treating skin cancer 551

Toshihiro Takahashi, Takashi Mizuno, Tatsuo Ido, Ren Iwata and Ken-ichi Watanabe

Improved synthesis of pure [18F]fluoro-compounds for PET studies 557 from bromo-compounds

Junfeng Yu, Urs O. Häfeli, Mark Sands and Yonghua Dong

<sup>90</sup>Y-oxine-ethiodol, a potential radiopharmaceutical for the treatment 567 of liver cancer

Technical note F. Füchtner and J. Steinbach

Efficient synthesis of the <sup>18</sup>F-labelled 3-O-methyl-6-[<sup>18</sup>F]fluoro-L-575 **DOPA** 

#### Radioactivity and Radiation Measurements

Jong In Byun, Yun Ho Choi, Seung Im Kwak, Han-Yull Hwang, Kun-Ho Chung, Geun Sik Choi, Doo-Won Park and Chang Woo Lee

579 An anticoincidence-shielded gamma-ray spectrometer for analysis of low level environmental radionuclides

Contents of Volume	58 / Applie	d Radiation and Isotopes 59 (2003) III–X
R. Broda	585	A review of the triple-to-double coincidence ratio (TDCR) method fo standardizing radionuclides
Ana F. Maia and Linda V.E. Caldas Letter to the Editor	595	Performance of a pencil ionization chamber in various radiation beam
D.R. Chettle, M.L. Arnold, A.C.A. Aro, D.E.B. Fleming, V.S. Kondrashov, F.E. McNeill, E.L. Moshier, H. Nie, S.J. Rothenberg, I.M. Stronach and A.C. Todd	603	An agreed statement on calculating lead concentration and uncertaint in XRF in vivo bone lead analysis
Technical note Aurelian Luca, Marie-Noëlle Amiot and Jean Morel	607	Determination of half-life and photon emission probabilities of <sup>65</sup> Zn
	Nucle	ear Geophysics
M. Ahmad, M.A. Tasneem, Muhammad Rafiq, I.H. Khan, M. Farooq and M.I. Sajjad	611	Interwell tracing by environmental isotopes at Fimkassar Oilfield Pakistan
Events	621	
Contents of volume 57	III	
Author index to volume 57	XIII	
Subject index to volume 57	XVII	
	1	Number 6
Radioche	emistry an	d Radionuclide Applications
Vladimir Zaichick and Margaret Tzaphlidou	623	Calcium and phosphorus concentrations and the calcium/phosphorus ratio in trabecular bone from the femoral neck of healthy humans a determined by neutron activation analysis
Rac	diation So	urces and Applications
Aslam, W.V. Prestwich, F.E. McNeill and A.J. Waker	629	Development of a low-energy monoenergetic neutron source for applications in low-dose radiobiological and radiochemical research
Jamal Asfahani	643	Optimization of low activity spectrometric gamma-gamma probes for

Aslam, W.V. Prestwich, F.E. McNeill and A.J. Waker	629	Development of a low-energy monoenergetic neutron source for applications in low-dose radiobiological and radiochemical research
Jamal Asfahani	643	Optimization of low activity spectrometric gamma-gamma probes for ash determination in coal stockpiles
Peter Gehringer, Helmut Eschweiler, Hermann Leth, Walter Pribil, Silvia Pfleger, Alexander Cabaj, Thomas Haider and Regina Sommer	651	Bacteriophages as viral indicators for radiation processing of water: a chemical approach

# Synthesis of Labelled Compounds

Jonathan McConathy, Ronald J. Voll, Weiping Yu, Ronald J. Crowe and Mark M. Goodman	657	Improved synthesis of anti-[18F]FACBC: improved preparation of labeling precursor and automated radiosynthesis
E.B. Araujo, J.S. Santos, M.T. Colturato, E. Muramoto and C.P.G. Silva	667	Optimization of a convenient route to produce <i>N</i> -succinimidyl 4-radiodobenzoate for radioiodination of proteins

Judith A. Egan and Crist N. Filer	675	Tritium labelling and characterization of the potent imidazoline I1 receptor antagonist [5,7- $^3$ H] ( $\pm$ )-efaroxan at high specific activity
G. Reischl, G.J. Kienzle and HJ. Machulla	679	Electrochemical radiofluorination. Part 2. Anodic monofluorination of substituted benzenes using [ <sup>18</sup> F]fluoride
Technical note		
Ganghua Tang, Xiaolan Tang,	685	Fully automated synthesis of O-(3-[18F]fluoropropyl)-L-tyrosine by
Mingfang Wang, Lei Luo and Manquan Gan		direct nucleophilic exchange on a quaternary 4-aminopyridinium resin

# Radioactivity and Radiation Measurements

B. Király, T. Sanami and J. Csikai	691	Advantages and limitations of thermal and epithermal neutron activation analysis of bulk samples
B. Zmazek, L. Todorovski, S. Džeroski, J. Vaupotič and I. Kobal	697	Application of decision trees to the analysis of soil radon data for earthquake prediction
M. Jurado Vargas, N. Cornejo Díaz and D. Pérez Sánchez	707	Efficiency transfer in the calibration of a coaxial p-type HpGe detector using the Monte Carlo method
Ayben Kilislioglu	713	The effect of various cations and pH on the adsorption of U(VI) on Amberlite IR-118H resin
Felícia D.G. Rocha, Mércia L. Oliveira and Linda V.E. Caldas	719	Thin sintered $Al_2O_3$ pellets as thermoluminescent dosimeters for the therapeutic dose range
Technical note		
Zhongsheng Pu, Jingkang Yang and Xiangzhong Kong	723	Cross-section measurements for $(n, 2n)$ , $(n, p)$ and $(n, n'\alpha)$ reactions on gallium isotopes in the neutron energy range of 13.5–14.6 MeV

# **Nuclear Geophysics**

K. Drozdowicz, E. Krynicka and J. Dabrowska	727	Diffusion cooling of thermal neutrons in basic rock minerals by Monte Carlo simulation of the pulsed neutron experiments
Fuents	735	